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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/538,803	06/13/2005	Yoshitaka Sakaue	2005_0966A	8801

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EXAMINER	
VERDERAME, ANNA L	
ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
08/31/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/538,803	SAKAUE ET AL.	
	Examiner	Art Unit	
	ANNA L. VERDERAME	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 August 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9 and 11-16 are* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9 and 11-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 July 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The finality of the office action mailed on 03/19/2009 has been withdrawn.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-8 and 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uno et al. US 6,449,239 in view of Ishimaru et al. US 2002/0006580.

Uno et al. teaches an optical recording medium as shown in figure 8. The examiner has provided a copy of figure 8 below which has been labeled to show the ordering of the layers. A copy of applicant's figure 1 has also been labeled and has been flipped so that the light incident plane of figure 1 and figure 8 line up so that the similarities between applicant's figure 1 and figure 8 of Uno et al. can be shown.

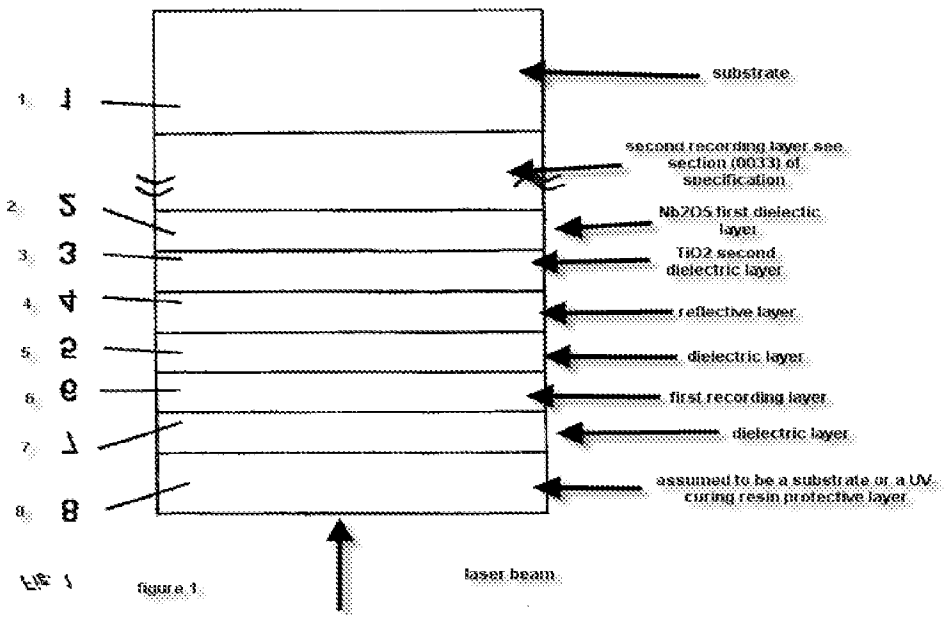
substrate
second recording layer see section (0033) of specification
Nb2O5 first dielectric layer
TiO2 second dielectric layer
reflective layer
dielectric layer
first recording layer
dielectric layer
assumed to be a substrate or a UV curing resin protective layer
laser beam

figure 1

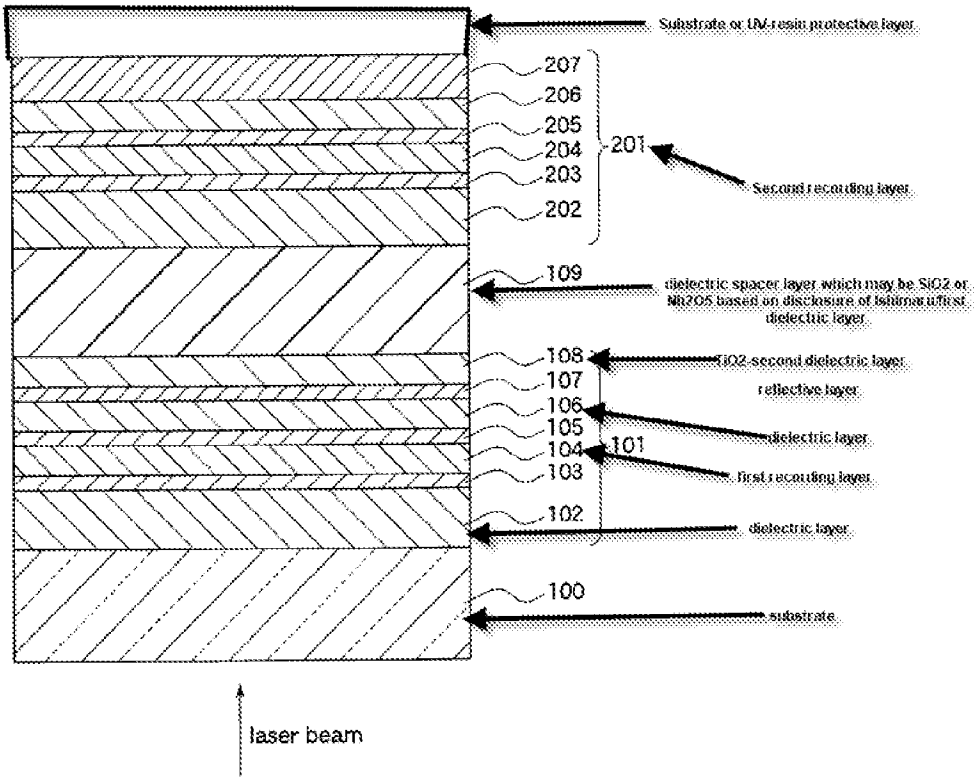

FIG. 8

The medium shown in figure 8 of Uno et al. contains a polycarbonate resin substrate 100 is coated with ZnS-SiO_2 protective layers 102,106,202, and 206, Ge-Cr-N interface layers 103,105,203,and 205, and Ag-Pd-Cu alloy for reflective layers 107 and 207, TiO_2 for thermal diffusion layer 108 and $Ge_4Sb_2Te_7$ for recording layers 104 and 204(17/28-43). The TiO_2 heat dissipation layer had a thickness of 40 nm(17/41). The separating layer 109 may be formed of a material which enables optical absorbance with respect to

the laser beam used for recording and reproduction to be as low as possible. As such a material SiO_2 is acceptable(11/54). Transmittance adjustment function of the TiO_2 is taught at (17/3).

In this embodiment the TiO_2 thermal diffusion layer corresponds to applicant's second dielectric layer and the separating layer 109, which may be made of a material such as SiO_2, corresponds to applicant's first dielectric layer. These layers are in the same location, relative to the incidence plane of the recording light, as those recited by applicant.

Uno et al. does not disclose that the separating layer 109 can be formed of Nb2O5. However, Uno et al. does disclose the use of inorganic dielectric materials including SiO2, Al2O3, and ZnS(emphasis added).

Uno et al. also does not disclose the presence of a second substrate or a UV-protection layer on top of the reflective layer 207. The examiner has made the argument that a protective layer or second substrate will necessarily be provided based on the knowledge that CDs and DVDs available commercially have a plastic or resin portion on both sides of the discs and do not have an exposed metal surface as would be the case if disc 8 of Uno et al. was not provided with a second substrate or a UV-curing resin layer. Also, in the disc in figure 1 taught by the applicant, it is believed that layer 8 is a second grooved substrate, a dummy substrate, or UV-curing resin layer.

Ishimaru et al. teaches inorganic dielectric materials for use in optical recording media as protective layers are disclosed. Among those listed are

Al_2O_3, ZnS, SiO_2 and Nb_2O_5(0040). This list of inorganic dielectric materials suitable for use in optical recording media completely overlaps the list recited in Uno et al. except for the presence of Nb2O5. The elements, including optical absorbance, considered when choosing a material for a dielectric material for a protective layer, particularly a dielectric layer located near to the light incidence plane, will be the same as those considered when choosing a material for a spacer layer like that in Uno et al. where low optical absorbance is necessary to allow the recording/reproducing light to penetrate to the further/second recording layer 201.

The teachings of Ishimaru establish interchangeability with respect to SiO_2 and Nb_2O_5.

Regarding the examiners position that the medium of figure 8 of Uno et al. will have a substrate or UV-curing resin layer on top of reflective layer 207, the examiner points to example 5 of Ishimaru. In example 5 a recording medium is formed by laminating a series of layers on a polycarbonate substrate and then spin-coating a UV-curing resin on a reflective layer to form a UV-cured layer having a thickness of 200 nm(0068-0073). Further, at (0043) Ishimaru et al. discloses that the protective layer can be an extruded plastic film, a substrate via an adhesive layer, etc.

With regard to claims 1-5, which claim an optical recording medium, it would have been obvious to modify the embodiment taught by Uno et al. in figure 8 by forming the separating layer 109 of Nb_2O_5 instead of SiO_2 based on the disclosure that this layer may be formed of an inorganic dielectric or glass

material and based on the equivalence of SiO_2 and Nb_2O_5 layers in optical recording media shown by Ishimaru et al. and with the reasonable expectation of success. Further, it would have been obvious to form a protective film on top of the exposed reflective layer 207 by forming a UV-curing resin layer, laminating an extruded plastic film or attaching a second substrate via an adhesive layer thereto based on the example of Ishimaru et al. at (0068-0073) and at (0043) and with a reasonable expectation of forming a protected optical disk.

In the medium rendered obvious above, as required by claim 1, a dielectric layer 109 made of Nb205 is formed between the first record layer 104 and the second substrate or UV-curing protective layer(not substrate 100), and a second dielectric layer 108 made of TiO2 is formed between the first record layer 104 and the second dielectric 109.

With regard to claims 2-3 the TiO2 layer is 100% TiO2 and is 40 nm thick.

With regard to claim 4, the second information layer is on the second recording layer in relation to the second substrate or UV-curing resin layer.

With regard to claim 5, a reflective layer 107 is formed between the second dielectric layer 108 and the first recording layer 104.

With regard to claim 12-13, the light incident plane is opposite the second substrate attached via an adhesive, the extruded plastic film or the UV-curing resin layer. The first information layer 101 is in contact with the second information layer 201. Further the TiO2 layer and the Nb205 layer will act as a transmittance adjustment layer based on the fact that they are made of the same materials as the transmittance adjustment layer taught by applicant and their

placement with respect to the light incidence plane and the first and second recording layers is the same as in applicant's disc. Further, Uno et al. discloses that at least the TiO2 film performs a transmittance adjustment function.

Thus it has been established that the medium of Uno et al. meets the requirements recited in the "medium claims" 1-5.

It would have been obvious to one of ordinary skill in the art that the medium rendered obvious above by the combination of Uno et al. and Ishimaru et al. could be formed by providing a substrate and forming the disc by forming reflective layer 207 on the disc first followed by layer 206 and each subsequent layer and providing substrate 100 on top by lamination or by using an adhesive layer to attach layer 100 with the reasonable expectation of forming an identical medium. By following this method the limitations of claims 6-8 and 11 will be met.

By following this method Nb2O5 dielectric layer 109 will be formed on top of layer 202, TiO2 layer 108 will be formed next so as to contact Nb205 layer 109, and the first recording layer 104 will be formed after TiO2 layer 108.

Claim 11 will be met because as noted above a reflective layer 107 is formed between the second dielectric layer of TiO2 and the first recording layer. In the method the second dielectric layer 108, the reflective layer 107, and the recording layer 104 will be formed in this order.

With regard to claim 14, As shown in figure 8, when the medium is formed in such a manner the light incident plane/substrate 100 will be opposite the substrate.

With regard to claim 15, in this method, the second information layer 201 is formed on the substrate and the first information layer 101, constituting dielectric layers 102 and 106 and recording layer 104, is formed on top of the second information layer 201. The laser incident side of the disc is opposite the substrate on which the films are laminated upon beginning with reflective layer 207.

With regard to claim 16, as shown in figure 8 the laser beam passes through the transmittance adjustment layer, collectively the TiO2 layer 108 and the Nb205 layer 109, before reaching the second information layer 201 and before reaching the recording layer of the second information layer 204.

3. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uno et al. US 6,449,239 in view of Ishimaru et al. 2002/0006580 as applied above and further in view of Ishibashi et al. JP-01-286136.

The teachings of over Uno et al. US 6,449,239 in view of Ishimaru et al. 2002/0006580 as applied above does not teach the limitations of claim 9.

Ishibashi et al. teaches a method by which a substrate made of polycarbonate is evacuated in a vacuum chamber to remove water and oxygen from the substrate. Then a SiO_2 protective layer is coated on the substrate.

The result of such a process is improved adhesion of the base protective layer and to prevent cracks from generating(abstract).

It would have been obvious to modify the method of forming an optical recording medium like that rendered obvious above by the combination of Uno in view of Ishimaru et al. by using a polycarbonate substrate in which the layer 207 is formed based on the disclosed use of polycarbonate substrate in optical recording media in Uno et al. and Ishimaru et al. and further removing water and oxygen from the polycarbonate substrate by evacuation in a vacuum chamber before forming further layers in order to prevent cracks which will result in variations in film thickness from generating as taught in the abstract of Ishibashi et al. When a crack constituting a raised or lowered portion is formed in a substrate each subsequent layer formed on the substrate will take over the uneven profile caused by the crack. Variations in thicknesses in the layers in optical recording media result in poor quality discs. Because of the variation of the physical thickness of the layer the optical thickness also varies.

Response to Arguments

4. The applicant argues that the formation of the TiO_2 layer is affected by the presence of water and oxygen in the substrate and that the removal of the water and oxygen from the substrate along with the formation of the TiO_2 layer on the Nb_2O_5 layer results in a layer having small variations in thickness. The examiner has provided reasoning for removing the water and oxygen from a polycarbonate substrate before film formation. Benefits of doing this include

improved adhesion and prevention of cracks. These two benefits will result in a film having greater integrity. Both cracking and lack of adhesion will result in a film having a varied thickness. Just because the benefits recited by the examiner are not identical to those recited by the applicant do not mean that the modification would not have been obvious or that the results noticed by the applicant are unexpected. The examiner further notes that nowhere in applicant's examples does applicant form a Nb2O5 layer directly on the substrate(emphasis added).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

-JP-2003091873- discloses an optical recording medium as shown on the first page comprising a first substrate 11 and a second substrate 12(abstract).

JP-2003016687- discloses a dual layer optical recording medium comprising a first substrate 11 and a second substrate 12. The disc also has an intermediate layer 15(abstract).

-JP-2002050079- discloses an optical disc having a substrate 2 and a second substrate (dummy substrate) 9 attached via an adhesive layer 8(abstract).

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANNA L. VERDERAME whose telephone number is (571)272-6420. The examiner can normally be reached on M-F 8A-4:30P.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on (571)272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark F. Huff/
Supervisory Patent Examiner, Art Unit 1795

/Anna L Verderame/
Examiner, Art Unit 1795